



## AAR-100

### Human Factors Newsletter # 00-09

(April 29, 2000 – May 12, 2000)

- **DSAR:** The last two controllers joined the Decision Support Automation Research (DSAR) Team. These controllers complete the total of 16 controllers that participated in the first DSAR study at the William J. Hughes Technical Center. The DSAR program investigates the effects of automation on controllers and their behavior. (B. Willems, WJHTC)
- **HOCSR:** Human Factors researchers supported a Proof of Concept (POC) activity for Phase 3 of the Host and Oceanic Computer System Replacement program. During the POC, they observed site representatives from the field interacting with several storage systems that are candidates for replacing the Direct Access Storage Device. Several vendors also demonstrated their Monitor and Control (M&C) applications. Human factors researchers provided interface design guidance and worked with the site representatives to understand what type of interface would best support their needs in an integrated M&C. (T. Yuditsky, WJHTC)
- **Human Factors in Acquisition:** Human Factors specialists participated in a Human Factors in Acquisition Technical Interchange Meeting at FAA Headquarters May 9-10 hosted by AAR-100. Presentations included: ARA Goal 2 Implementation, AUA and AND Perspectives on Human Factors in IPTs, IPLT Human Factors Sub-team Implementation Plan Highlights, NASA Human Factors Perspective, Flight Strip Reduction for Decision Support Tools, Human Factors Design Guide Update, Human Factors Issues in Future Airway Facilities Systems, Rapid CHI Prototyping in FAA Acquisition Programs, Oceanic Human Factors, En Route CHI Upgrades, Security Human Factors, TMA and pFAST Human Factors Design in Free Flight Phase I, Direct-to-Tool Prototype, CPDLC, Ohio Valley/Safe Flight 21, Trajectory Orientation Approach to En Route Strategic Planning, URET Human Factors Design in Free Flight Phase I, Human Factors Analysis of Operational Errors, Tower Human Factors for Mission Analysis, Tower ATC Simulation Capabilities, Early AGIE Results, FMS/CTAS Integration, Tower Virtual Displays, and Human Factors Issues in PARR. (P. Krois, AAR-100; M. McAnulty, WJHTC)
- **Human Factors Demonstrations:** The William J. Hughes Technical Center Research and Development Human Factors Laboratory (RDHFL) hosted human factors researchers from NASA-Ames and NASA-Langley. All three groups and ACT-540 gave overview

presentations of their programs. RDHFL staff gave demonstrations of virtual reality prototyping and Standard Terminal Automation Replacement System (STARS) Computer Human Interface (CHI) prototyping, and of the Decision Support Automation Research project being conducted in the I2F laboratory. Technical Center personnel coordinated tours of the DSR, STARS (String 4), Oceanic, Traffic Flow Management, and PRM laboratories, and the CPDLC Cockpit Simulator and the Technical Center aircraft fleet. (M. McNulty, WJHTC)

- **Image Quality Testing:** Members of the Human Factors Program (AAR-510) met with Dr. Mathew Valetton from TNO Human Factors in the Netherlands to discuss image quality testing. Dr. Valetton is proposing an image quality tester for x-ray baggage screening systems. If developed, this tester would provide feedback that is not subjective. Also in attendance was Mr. Fred Roder from the Office of the Associate Administrator for Civil Aviation Security (ACS). (G. Embrey, AAR-3)
- **FAA and ATF Joint Pilot Program:** AAR-520 coordinated a meeting with ACO-610, ACP-400, the ATF, Metropolitan Washington Airport Authority, Battelle, and Galaxy Scientific to review reports submitted for the purpose of comparing FAA and ATF canine programs. Results of a demonstration conducted at Dulles International Airport and a human factors assessment were reviewed. All parties concurred on comments made on the reports during the 2-day meeting. Battelle and Galaxy Scientific will incorporate comments and submit their final reports to AAR-520. (G. Embrey, AAR-3)
- **RNAV Symbolology:** Divya Chandra and Dan Hannon of the Volpe Center are performing a rapid response, short-term empirical evaluation for FAA Flight Standards (AFS-420) on the differences between US and ICAO aeronautical chart symbolology for RNAV procedures. The US and ICAO symbols for fly-by and fly-over waypoints are currently in conflict with each other. In particular, the ICAO fly-over symbol is identical to the US fly-by symbol, creating a safety of flight issue. A decision on the symbolology standard will be made at the upcoming June meeting of the ICAO Obstacle Clearance Panel (OCP) in Madrid. In an effort to provide an empirical basis for this decision, the Volpe Center will be conducting a two-part paper-and-pencil study with airline pilots to assess their ability to use the US and ICAO fly-by and fly-over symbols on realistic mock aeronautical charts (provided by NOAA). Data will also be collected on how well pilots interpret the meaning of alternative symbols, to determine if the rules used to construct the symbols are evident and applied. Results of this study will be presented by the FAA representative to the OCP meeting. (T. McCloy, AAR-100; D. Chandra, D. Hannon, VNTSC)
- **Controller Shift Work Field Study:** Civil Aeromedical Institute (CAMI) researchers are at the Pittsburgh ATC tower in Pittsburgh, PA, where work has commenced on the Congressionally mandated Controller Shift Work Field Study. In addition to measures of cognitive performance and gathering of log book data and activity measures, volunteer ATCSs are providing information regarding the nature and quality of their sleep during the course of their work week. As part of the ATC shiftwork and fatigue program at CAMI, a laboratory study comparing clockwise and counterclockwise rapidly rotating shift schedules, with particular attention to the 2-2-1 scheduled used in air traffic control is underway. The study is designed to examine the effects of the work schedules on complex task performance,

vigilance, circadian rhythms, sleep quality, and subjective fatigue. (C. Cruz, T. Nesthus, CAMI)

- **Human Factors Engineering TAG:** Human factors representatives participated in the 44<sup>th</sup> Meeting of the Department of Defense Human Factors Engineering, Technical Advisory Group (TAG) that was held in Arlington, VA. Dr. Thomas Nesthus/CAMI and Dr. James Miller (USAF Academy) served as Co-chairs of the Sustained Operations Sub-TAG. Dr. Miller presented information concerning the Cognitive Assessment and Sleep Laboratory at Brooks AFB, TX. Dr. Steve Hursh (SAIC) presented information on the Sleep, Activity, Fatigue, and Task Effectiveness (SAFTE) Model and an integrated scheduling tool called the Fatigue Avoidance Scheduling Tool (FAST-2000). Dr. Nesthus followed with a presentation on the FAA-CAMI Congressional Shiftwork and Fatigue project. (T. Nesthus, CAMI)
- **HFACS Briefings:** CAMI provided briefings to representatives from the FAA Integrated Team for Runway Safety (ITRS) and the Office of System Safety (ASY) in Washington, D.C. Presentations were focused on the Human Factors Analysis and Classification System (HFACS) taxonomy for investigating aircraft accidents and the adaptation of HFACS to the analysis of ATC operational errors and runway incursion incidents. The human factors analysis of runway incursions is being conducted to support the ITRS program. (J. Pounds, S. Shappell, CAMI)
- **ATC Human Factors:** Dr. Paul Krois (AAR-100), Mr. Steve Pansky (ARX-20), Mr. Clarence Jones (ATO-410), Dr. Al Smith (ARX-100), and Dr. Ed Troutman (ARX, Contractor) conferred with Human Resources Research Division (CAMI) scientists, and received briefings on the status of the ATC Human Factors Research Program. Dr. Mitch Grossberg (ATO-410) participated via telecon. A portion of the meeting was devoted to identifying future ATC human factors research requirements. (C. Lowman, CAMI)
- **En Route ATC Simulation Study:** CAMI representatives traveled to the William J. Hughes Technical Center to review study plans for a simulation study that addresses display complexity factors in en route ATC. The participants extensively discussed the study protocol and ATC scenarios. Included was an observation the Human Factor Lab's DESIREE simulation capability and a viewing of subjects being run in the I<sup>2</sup> F Laboratory. (C. Manning, CAMI; T. Yuditsky, WJHTC)

*More information on human factors research can be found at the FAA Human Factors (AAR-100) web site <http://www.hf.faa.gov>*

Mark Rodgers  
FAA (AAR-100)



**May 22-25, 2000-** The Future of Free Flight NASA Distributed Air/Ground Workshop, NASA Ames Research Center, Moffett Field, CA <http://www.asc.nasa.gov/aatt> e-mail: [aboyle@mail.arc.nasa.gov](mailto:aboyle@mail.arc.nasa.gov)

**May 23-26, 2000-** FAA Eurocontrol Action Plan 6 Technical Meeting on Departure Clearances, Amsterdam, Netherlands e-mail: [Paul.Krois@faa.gov](mailto:Paul.Krois@faa.gov)

**May 31, 2000-** Commercial Space Transportation Advisory Committee Meeting, Bessie Coleman Conference Center, FAA Headquarters, Washington, DC <http://ast.faa.gov/>

**June 3, 2000-** AOPA Fly-In and Open House, AOPA Headquarters, Frederick, MD <http://www.aopa.org/special/fly-in/2000/>

**June 6-8, 2000-** Digital Human Modeling for Design and Engineering (DHM) Conference and Exposition, Hyatt Regency, Dearborn, MI <http://www.sae.org/calendar/dhm00/index.htm>

**June 7-8, 2000-** *Autoflight Industry Workshop, DoubleTree Hotel, Denver, CO e-mail: [seamster@qwestinternet.net](mailto:seamster@qwestinternet.net)*

**June 13-16, 2000-** 3<sup>rd</sup> International Air Traffic Management R&D Seminar, “ATM-2000”, Napoli, Italy <http://atm-seminar-2000.eurocontrol.fr>

**June 14-15, 2000-** Fourth GAIN World Conference, Le Meridien Montparnasse Hotel, Paris, France <http://www.asy.faa.gov/gain/conferences/gain4/gain4info.html>

**June 20-22, 2000-** Threats, Countermeasures, and Situational Awareness: Teaming for Survivability, The Virginia Beach Pavilion and Convention Center, Virginia Beach, VA [http://corp-nt20.nawcad.navy.mil/nawcad/news/sit\\_aware/2000/](http://corp-nt20.nawcad.navy.mil/nawcad/news/sit_aware/2000/)

**July 30 – August 4, 2000-** 14th Triennial Congress of the International Ergonomics Association and the Human Factors and Ergonomics Society 44th Annual Meeting “IEA 2000/HFES 2000”, San Diego Marriott Hotel and Marina, San Diego, CA <http://iea2000.hfes.org/>

**August 27-September 1, 2000-** 22<sup>nd</sup> International Council of the Aeronautical Sciences (ICAS) Congress, Harrogate, UK <http://www.aiaa.org/calendar/icas00cfp.html>

**October 10-12, 2000-** World Aviation Congress and Exposition, Town and Country Hotel, San Diego, CA <http://www.sae.org/calendar/wac00/index.htm>

**October 15-19, 2000-** Human Performance, Situation Awareness & Automation: User-Centered Design for a New Millennium, Marriott Riverfront, Savannah, GA <http://www.ie.msstate.edu/hpsaa/index.html>

*Note: Calendar events in Italics are new since the last Newsletter*



Comments or questions regarding this newsletter?  
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